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Docket No.: 49657-742

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of : Customer Number: 20277  
Katsunori ITOU, et al. : Confirmation Number: 4615  
Serial No.: 09/582,982 : Group Art Unit: 1742  
Filed: July 10, 2000 : Examiner: H. Wilkins, III  
For: ANTIFRICTION BEARING PART FOR HIGH TEMPERATURE

**TRANSMITTAL OF APPEAL BRIEF**

Commissioner for Patents  
Washington, DC 20231

Sir:

Submitted herewith in triplicate is Appellant(s) Appeal Brief in support of the Notice of Appeal filed June 14, 2004. There is no Appeal Brief fee due, because the Appeal Brief fee was paid in a prior Appeal.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

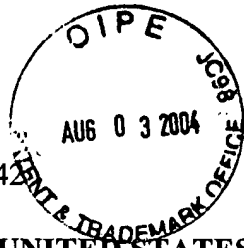
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Docket No.: 49657-74

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

Katsunori ITOU et al.

Serial No. 09/582,982

Filed: July 10, 2000

Art Unit: 1742

Examiner: H. Wilkins, III

FOR: ANTIFRICTION BEARING PART FOR HIGH TEMPERATURE

**APPEAL BRIEF**

Commissioner for Patents  
Washington, DC 20231

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed June 14, 2004.

**I. REAL PARTY IN INTEREST**

The real parties in interest are NTN CORPORATION and DAIDO STEEL COMPANY,  
LTD.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related Appeal or Interference.

### **III. STATUS OF CLAIMS**

Claims 1 and 2, all pending claims, have been finally rejected. It is from the final rejection of claims 1 and 2 that this Appeal is taken.

### **IV. STATUS OF AMENDMENTS**

No Amendment has been filed subsequent to the issuance of the Final Office Action dated March 19, 2004.

### **V. SUMMARY OF THE INVENTION**

The present invention is directed to an antifriction bearing part designed for high temperature service, such as for power transmission or an engine part of an automobile, aircraft ship, or an industrial machine employed under severe environmental conditions demanding excellent rolling contact fatigue life and reliability (page 1 of the written description of the specification, lines 16 through 20). Prior art carbonitriding treatments are undesirably costly (paragraph bridging pages 1 and 2 of the written description). High temperature tempering treatments adversely impact hardness, rolling contact fatigue life and resistance (page 2 of the written description, lines 13 through 16). In addition, high-temperature tempering performed to ensure high temperature dimensional stability results in the undesirable decomposition of austenite (paragraph bridging pages 2 and 3 of the written description).

The present invention addresses and solves such problems by providing a high temperature antifriction bearing part having an excellent rolling fatigue life in severe environments at a low cost (ultimate paragraph on page 3 of the written description). That objective is achieved by formulating a steel having a specific combination of elements (page 4 of

the written description, lines 2 through 6). Compositional ranges and functions of elements are set forth commencing at page 5 of the written description, line 17 through page 9, line 26. Data appearing in the specification, notably Tables 1, 3 and 4, illustrate unexpected and dramatic superior rolling fatigue life at 200°C of steels encompassed by the claimed invention vis-à-vis steels without nickel. The impact of various alloying elements on temper hardness and rolling contact fatigue life shown in Tables 1 and 3 undermines any notion that the arbitrary combination or ingredients from Takada et al. and Ochi et al. necessarily results in a steel having a hardness after tempering at a temperature of 180°C to 350°C of at least HRC 58 and a minimum carbide size not greater than 8  $\mu\text{m}$  as set forth in independent claim 1.

## **VI. ISSUES**

### **A. The Rejections:**

(1) Claims 1 and 2 were finally rejected under 35 U.S.C. § 103 for obviousness predicated upon Adachi et al. with support from Ochi et al.; and

(2) Claims 1 and 2 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Takada et al. in view of Ochi et al., the acknowledged prior art and “High Carbon Chromium Bearing Steels” (JIS).

### **B. The Issues Which Arises In This Appeal and Require Resolution by the Honorable Board of Patent Appeals and Interferences (the Board) are:**

(1) Whether claims 1 and 2 are unpatentable under 35 U.S.C. § 103 for obviousness predicated upon Adachi et al. with support from Ochi et al.; and

(2) Whether claims 1 and 2 are unpatentable under 35 U.S.C. § 103 for obviousness

predicated upon Takada et al. in view of Ochi et al., the acknowledged prior art and JIS.

## **VII. GROUPING OF CLAIMS**

The appealed claims stand or fall together as a group with independent claim 1.

## **VIII. THE ARGUMENT**

### **Opening Statement**

This is the third Appeal Brief which the Examiner has forced Appellants to submit during prosecution of this patent application. The Examiner retreated from the initial two Appeal Briefs, circled his wagons, and served up a meal of generalizations devoid of nutrition while seemingly satisfied to starve on facts. This time, the Examiner completely ignores arguments previously presented as to the rejection predicated primarily upon Takada et al., and offers up a rejection based upon Adachi et al., somehow said to be supported by Ochi et al., predicated upon a contrived phantom example driven by the Examiner's refusal to face facts. Hopefully, the tortuous journey ends here.

- 1. The Rejection of Claims 1 and 2 under 35 U.S.C. § 103 for obviousness predicated upon Adachi et al. supported by Ochi et al.**

### **The Examiner's Position**

The Examiner relies upon steel No. 6 in Table 1 of Adachi et al. The Examiner admits, as he must, that the silicon content of the disclosed steel, which is 0.42%, differs from that recited in independent claim 1 which requires a silicon content of at least 0.5%. Rather than comply with judicial requirements and provide a fact-based explanation why one having ordinary

skill in the art would have been realistically motivated to modify the disclosed steel No. 6 by purposely increasing the silicon content to at least 0.5%, the Examiner simply and cavalierly reformulates the disclosed steel No. 6 by pretending its silicon content is actually i499999%, which it is **not**.

The Examiner then runs to Ochi et al., not for increased silicon, but to support the Examiner's retrospective assessment that one having ordinary skill in the art would have recognized that this phantom steel disclosed by Adachi et al. exhibits antifriction properties. The Examiner's cavalier treatment of the 0.5% limitation on silicon is, under the facts of this case, factually and legally erroneous.

### **Facts**

Adachi et al. do not disclose any steel containing 0.499999% silicon. The disclosed maximum of 0.5% is just that, a maximum to avoid. Hence, all the examples are below 0.5% silicon. Steel No. 6 contains 0.42% silicon – not 0.499999%, and one having ordinary skill in the art would have been led away from purposely increasing the silicon content because it is a bad actor at 0.5%.

The Examiner is without his jurisdiction to **dismiss** the claim limitation requiring **at least** 0.5 wt% silicon. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988); *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971); *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). Indeed, the Court of Appeals for the Federal Circuit has specifically held that even so called minor differences between a claimed invention and the prior art must be evaluated with respect to the fact-based motivational element. The Examiner's

attention is invited to *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990). See, also, *In re Lange*, 644 F.2d 856, 209 USPQ 288 (CCPA 1981).

**The Minimum Claim Limitation on Silicon of 0.5 wt% is Significant.**

The Examiner's determination that the admitted difference in silicon content between the claimed invention and prior art is not significant is not only devoid of any factual basis but is clearly **wrong**. Indeed, the Examiner's own reference to Adachi et al. discloses the significance of the 0.5 wt% silicon limitation. Specifically, Adachi et al. disclose that a silicon content of 0.5% or more results in saturation with an attendant significant **degradation** of machineability, cold-workability and hot-workability. The significance of the 0.5 wt% silicon limitation should also be apparent from the reference to Mitamura et al. (U.S. Patent No. 5,989,694) cited in the Information Disclosure Statement submitted concurrently herewith. As taught by Mitamura et al., if the silicon content is less than 0.5%, high temperature hardness is reduced. See, also, Table 1 of Mitamura et al., material E vis-à-vis material L, evincing the significance of a difference even between 0.46 weight silicon and 0.53 wt% silicon.

Truth to the Examiner in this case is an ugly and indigestible fact. The truth is a persistent fact which the Examiner not only blatantly ignores, but offers a reasoning to the Honorable Board which is clearly inconsistent with the truth. The hard fact of record which the Examiner ignores is that there is a difference between steels having a silicon content less than 0.5 wt% and at least 0.5 wt%. That difference is supported on this record by not only Adachi et al. but Mitamura et al. The Examiner cannot step into the ring with Adachi et al. and Mitamura et al. and say they are wrong because the Examiner knows better. In such a bout, the Examiner is without the requisite credentials.



Appellants would stress that the present invention is directed to a rolling bearing for high temperature service and, hence, requires heat resistance. Unlike Adachi et al., Appellants found that the saturation point of the heat-resistant effect is at 3%, **not at less than 0.5% as specifically taught by Adachi et al.** Thus, the present invention proceeds **against** the teachings of the primary reference to Adachi et al.

In the face of the above hard evidence of record, the Examiner's cavalier treatment of a clear functionally significant difference between the claimed invention and the prior art, which the prior art says is significant, and is functionally significant, constitutes **clear legal error**.

#### **Evidence of Nonobviousness**

It is well settled that a **teaching away** from a claimed invention constitutes evidence of **nonobviousness**. *In re Bell*, 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986); *In re Marshall*, 578 F.2d 301, 198 USPQ 344 (CCPA 1978). As previously pointed out, the Examiner's primary reference to Adachi et al. **teaches away** from a silicon content of 0.5% or more. This expressed **teaching away** from the claimed invention constitutes clear evidence of **nonobviousness**. It is legal error for the Examiner to ignore any evidence of nonobviousness, including a clear teaching away from a claimed invention. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); *Stratoflex Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983).

The Examiner requested evidence of unexpected results. Firstly, there is no requirement for Appellants to proffer any evidence of nonobviousness until such time that the Examiner

established, a *prima facie* case of obviousness. This the Examiner has **not** done. *In re Mayne*, 104 F.3d 1339, 41 USPQ2d 1451 (Fed. Cir. 1997); *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995); *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). At any rate, the significance of the 0.5 wt% limitation is disclosed by the Examiner's own reference to Adachi et al.

The secondary reference to Ochi et al. does not cure the above argued deficiencies of Adachi et al. Significantly, the Examiner does not even suggest that Ochi et al. would have led one having ordinary skill in the art to alter the composition of Adachi et al.

### **The Examiner's Response**

In the fifth enumerated section on page 12 of the March 19, 2004 Final Office Action, the Examiner says that he did not ignore the 0.5wt% minimum silicon limitation of claim 1. The Examiner asserts that the disclosure a silicon range of 0.499999 wt% silicon is sufficiently close to the 0.5wt% minimum of the claimed invention that one having ordinary skill in the art would have expected the two alloys to have the same property. But the fact of the matter is that Adachi et al. do **not** disclose a silicon concentration of 0.499999 wt.% silicon. This figment of the Examiner's imagination has no basis in fact. And one having ordinary skill in the art would **not** have interpreted Adachi et al. as **encouraging** a silicon limitation of 0.499999wt%. The reason why one having ordinary skill in the art would not have interpreted Adachi et al. as encouraging a silicon limitation of 0.499999 wt.% is that near 0.5wt% silicon it becomes a bad actor.

If one having ordinary skill in the art would have looked to the examples of Adachi et al., **and the Examiner's case is, after all, predicated upon steel number 6 of Table 1**, the actual silicon limitation relied upon is 0.42wt% -- not 0.499999 wt.%. In fact, the closest any of the

examples of Adachi come to 0.5wt% is Example 16. But the Examiner does not see fit to rely upon Example 16 with 0.46wt% silicon because it does not meet the minimum requirements for nickel, and the silicon content is still well below the claim **minimum** of 0.5 wt. %.

Appellants would stress the issue is not what a mathematician would have assumed Adachi et al. theoretically encompassed insofar as the silicon content. The issue is what Adachi et al. actually disclosed and how one having ordinary skill in the art would have interpreted the teachings of Adachi et al. On this issue, Appellants note on page 8 of the March 19, 2004 Final Office Action, the Examiner states:

In response, while it is true Adachi et al do teach that increasing above 0.5wt% produces poorer results ...

Adachi et al., in fact, teach one having ordinary skill in the art to stay away from 0.5wt% silicon. This is confirmed by Mitamura et al.

The Examiner downplays Mitamura et al. stating that there are other variables that affect the hardness. The Examiner focuses on nickel which is not introduced as an alloying element in Example 16 of Adachi et al., the example with the highest silicon content. When it comes to combining references in the second rejection, the Examiner is not one to face the fact that other alloying elements influence the properties of the steel. In other words, when convenient for the Examiner, all steels are interchangeable. However, when it is clear that one having ordinary skill in the art would have recognized that in the type of steel encompassed by Adachi et al., silicon is a bad actor, because Adachi et al. say so, which is confirmed by Mitamura et al., the Examiner then falls back on the influence of other alloying elements.

The issue, of course, is what one having ordinary skill in the art would have understood from the teachings of Adachi et al. and Mitamura et al. The answer is stay away from 0.5wt%

silicon, **not** see how close you can come without getting burned. That is why the claimed invention is patentable because it proceeds **against** the teachings of the applied prior art.

### **Conclusion**

Based upon the foregoing, it should be apparent that a *prima facie* basis to deny patentability to the claimed invention has not been established for lack of the requisite factual basis and the complete absence of any fact-based motivation. *In re Lee*, 237 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). Moreover, based upon the **clear teaching** away from the claimed invention by the Examiner's reference to Adachi et al., the conclusion appears inescapable that one having ordinary skill in the art would **not** have found the claimed invention **as a whole** obvious within the meaning of 35 U.S.C. §103. *In re Piasecki*, 745 F.2d 1468, 223 USPQ 785 (Fed. Cir. 1984). Appellants, therefore, submit that the imposed rejection of claims 1 and 2 under 35 U.S.C. §103 for obviousness predicated upon Adachi et al. in view of Ochi et al. is not factually or legally viable.

### **2. The rejection of claims 1 and 2 under 35 U.S.C. §103 for obviousness predicated upon Takata et al. in view of Ochi et al., the acknowledged prior art and “High Carbon Chromium Bearing Steels” (JIS).**

The Examiner **failed** to provide any **factual** evidence to support the conclusion that one having ordinary skill in the art out in the real world would have recognized that the steels of Takata et al. and Ochi et al., and the SUJ2 steel selected by the Examiner from JIS, are **suitable for high temperature use**. This conspicuous factual vacancy is related to the **particular problem** addressed and solved by the claimed invention, which problem the Examiner persists in

ignoring thereby committing further legal error. The SUJ2 steel identified by the Examiner was **known to have an unsatisfactory service life under a load**. The Examiner improperly ignores this fact. Both Takada et al. and Ochi et al. address the problem of **oxygen** inclusions and provide a material designed for a longer life under a high load. **But the known high temperature problem associate with SUJ2 was not solved**. Again, this is ignored by the Examiner.

The **problem** with the SUJ2 steel is that it must be heat treated at a high temperature tempering for dimensional stability which **disadvantageously reduces surface hardness** and leads to **decomposition** of the retained austenite on the surface. The reduced hardness decreases the rolling contact fatigue life of the roller bearing, and the decreased amount of austenite does not relieve stress concentration in an environment contaminated by foreign matter.

Because high temperature service required tempering at a high temperature which would degrade the surface hardness and significantly shorten the life of SUJ2, SUJ2 **could not have both the dimensional stability and surface hardness at a high temperature at the same time**. Hence, SUJ2 conventionally sacrificed durability.

It is **legally erroneous** to ignore any evidence of **nonobviousness**. Evidence was introduced and discussed at page 7 of the August 20, 2003 responsive Amendment. The Examiner **improperly ignored** such evidence, thereby committing **legal error**. Appellants would refer to Japanese Patent No. 2870831 which was filed on July 31, 1989 by NSK Ltd., wherein the following relevant disclosure appears:

Conventionally, in order to preferentially solve the problem of the dimension stability of the rolling bearing for a semi-high temperature use, a high carbon chromium rolling steel (SUJ2) has been subjected to high temperature temper. A high-temperature tempered SUJ2 product has been

provided with an improved dimension stability obtained by transforming the remaining austenite into martensite in advance. ...Although the high-temperature tempered SUJ2 product described above has the improved dimension stability, the high-temperature tempering degrades the hardness thereby shortening a lifetime due to plastic deformation and the like. In addition, because of insufficient anti-friction, the bearing may suffer friction under the boundary lubrication when used at a high temperature.

The above disclosure corroborates Appellants' position that it was well known in the art that SUJ2 is an **inappropriate bearing steel for high temperature use**, because conventional attempts were unable to produce the steel with **simultaneous high temperature dimensional stability and surface hardness**. Not one single reference cited by the Examiner suggests any solution to that problem, i.e., simultaneous high temperature dimensional stability and surface hardness. The fact that the applied prior art was **unable** to solve this problem, i.e., simultaneously high temperature dimensional stability and surface hardness, is a **potent indicum of nonobviousness** which the Examiner **must consider**.

The Examiner's assertion that SUJ2 is a bearing steel for high temperature service is, therefore, **technological inaccurate**. Moreover, it matters not one whit whether the steels disclosed by Takata et al. and Ochi et al. are similar to SUJ2. **None of them are suitable for high temperature**.

The absence of sufficient facts in this case is inextricably linked to the particular problem addressed and solved by the claimed invention, i.e., simultaneous high temperature dimensionally stability and surface hardness. Applicants have addressed and solved that problem while those having ordinary skill in the art **failed**. Under such circumstances, the problem addressed and solved by the claimed invention constitutes a **potent indicum of nonobviousness**. *Jones v. Hardy*, 727 F.2d 1524, 220 USPQ 1021 (Fed. Cir. 1984).

### **The Examiner's Rationale**

The Examiner's tortuous road to the obviousness conclusion bridges factual lacunas with legal error. Bearing in mind the absence of any factual basis upon which to predicate the conclusion that one having ordinary skill in the art would have realistically considered the steel disclosed by either Takada et al. or Ochi et al. a high temperature bearing steel, the Examiner begins with an admission that the steel disclosed by Takada et al. does not contain nickel. The Examiner concludes that one having ordinary skill in the art would have been motivated to incorporate nickel in the steel disclosed by Takada et al. in view of Ochi et al. **Still not there**, the Examiner concluded that one having ordinary skill in the art would have been motivated to heat treat the resulting steel, after adding nickel, at an elevated temperature. The basis for this conclusion is a perceived admission at page 2 of the written description of the specification, lines 7 through 12. **Still not there**, the Examiner selects a steel from JIS, says its similar to that disclosed by Takada et al. after adding nickel, and then says that one having ordinary skill in the art would have expected that modified steel of Takada et al. to exhibit properties similar to that picked out of JIS. It is only after all of these pieces are thrown into the stew that the Examiner finally retreats to the doctrine of inherency. In other words, the Examiner's legally erroneous approach is that **if** the right components are selected and **if** selected in the right amounts from the disclosure of Takada et al., and **if** nickel is added in the right amount, and **if** the resulting steel is processed as if it was a high temperature steel (which has yet to be factually established), **then** the claimed invention would result, i.e., the steel would exhibit the properties recited in independent claim 1. Appellants submit that the Examiner's rejection is factually and legally erroneous on its face.

### **There is no Motivation**

The Examiner failed to make a “thorough and searching” factual inquiry and failed to provide a fact-based explanation explain **why** one having ordinary skill in the art would have been realistically impelled to combine applied references to arrive at the claimed invention. *In re Lee*, 237 F.3d 1338, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002).

The Examiner failed to provide any **factual basis** to support the assertion that one having ordinary skill in the art out in the real world would have recognized that the steels disclosed by Takata et al. and Ochi et al. are bearing steels **designed for use at high temperatures**, i.e., exhibit a long life under high temperature conditions. Ergo, even **if** the steels disclosed by Takata et al. and Ochi et al. were intermixed, as though one having ordinary skill in the art would have arbitrarily mixed elements from hundreds of thousands of steel compositions, one having ordinary skill in the art would **still not have been realistically motivated** to heat treat that steel at elevated temperatures, as in the claimed invention. *In re Lee, supra*. Again, the Examiner has **not factually** established the required fact-based motivation to heat treat the steels of Takata et al. or Ochi et al. at an elevated temperature as is the claimed invention.

### **The Examiner’s Legally Erroneous Reliance Upon Inherency**

The Examiner committed **clear legal error** by falling back on an inherency theory in the context of the imposed under 35 U.S.C. §103 for obviousness. The Examiner’s invocation of the doctrine of inherency appears to be predicated upon the theory that **if** the proper amount of ingredients of the steel disclosed by Takata et al. are selected, **if** that steel is modified by incorporating the right amount of nickel, and further **if**, the resulting steel is heat treated at a sufficiently high temperature for a sufficient time, **then** the claimed invention would result. In



other words, pick the right ingredients, heat at the right temperature, following the blueprint of the Appellants' disclosure, and the invention results. This approach is legally erroneous for at least two reasons.

Firstly, in order to invoke the doctrine of inherency, the Examiner must **factually** establish that the allegedly inherent properties **necessarily** flow from the teachings of the applied prior art. *Crown Operations, International, Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002); *Finnegan Corp. v. ITC*, 180 F.3d 1354, 51 USPQ2d 1001 (Fed. Cir. 1999); *In re Robertson*, 169 F.3d 743, 49 USPQ2d 1949 (Fed. Cir. 1999). Clearly, since each alloying element must be selected in the right amount to achieve the properties recited in the claims, and the right heat treating temperature must be employed, it is legally erroneous to conclude that the recited properties would **necessarily** result from the teachings of the applied prior art.

Moreover, the Examiner's agglomeration of "ifs" necessary to support the rejection underscores legal error. Specifically, the Examiner's approach is that **if** the right amount of ingredients of the steel disclosed by Takata et al. are selected, and **if** nickel is added in the right amount, and then **if** one skilled in the art would have recognized that the resulting steel is suitable for high temperature use, and that has not been established by facts, and then **if** the fortuitously formulated steel is tempered under the right conditions, **then** maybe the claimed invention would result. This approach has been repeatedly judicially condemned as **confusing obviousness with inherency**. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *In re Shetty*, 566 F.2d 81, 195 USPQ 753 (CCPA 1977); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Naylor*, 369 F.2d 765, 152 USPQ 106 (CCPA 1966); *In re Spormann*, 363 F.2d 444, 150 USPQ 449 (CCPA 1966); *In re Henderson*, 348 F.2d 550, 146

*USPQ 372 (CCPA 1965).*

Appellants would refer to *Ex parte Schriker*, 56 USPQ2d 1723, 1725 (BPAI 2000);

wherein the Honorable Board of Patent Appeals and Interferences stated:

Inherency and obviousness are somewhat like oil and water-  
they do not mix well.

Ergo, the Examiner's reliance upon the doctrine of inherency is **legally erroneous**.

### **Evidence of Nonobviousness**

It is **legally erroneous** to ignore, as the Examiner has done, any evidence impacting **nonobviousness**. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988); *Stratoflex Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *In re Murch*, 464 F.2d 1051, 175 USPQ 89 (CCPA 1972). That legal tenet applies to evidence in the specification. *In re Glaug*, \_\_\_F.3d\_\_\_, 61 USPQ2d 1151 (Fed. Cir. 2002); *In re Soni*, 54 F.3d 746, 34 USPQ2d 1685 (Fed. Cir. 1995); *In re Margolis*, 785 F.2d 1029, 228 USPQ 940 (Fed. Cir. 1986). It is apparent from Tables 3 and 4 that the **rolling** fatigue life and foreign matter rolling life at 200°C of steels containing nickel are clearly **unexpectedly and dramatically superior** to those that do not contain nickel. That this is unexpected is underscored by the fact that the Examiner has **not** identified a factual basis to support the conclusion that one having ordinary skill in the art would have recognized that the steel disclosed by Takata et al., or the steel disclosed by Ochi et al., or some phantom steel resulting from blending alloying elements from these steels, is intended for high temperature bearing use.

It should be apparent from Tables 1 and 3 that elements such as nickel, sulfur, phosphorous, manganese, carbon, molybdenum, vanadium as well as trace amounts of aluminum, titanium, oxygen and nitrogen, affect the temper hardness and **high temperature rolling contact**

**fatigue life.** Such evidence further scotches any notion that somehow the combined disclosures of Takata et al. and Ochi et al. would result in a steel which **necessarily**, repeat **necessarily**, exhibits a hardness after tempering at a temperature of 180°C to about 350°C of at least HRC 58 and a maximum carbide size not greater than 8  $\mu\text{m}$ .

Another potent indicum of **nonobviousness**, which the Examiner persists in erroneously ignoring, is the **problem** addressed and solved by the claimed invention which must be given consideration anent the **nonobviousness** issue. *North American Vaccine, Inc. v. American Cyanamid Co.*, 7 F.3d 1571, 28 USPQ2d 1333 (Fed. Cir. 1993); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 15 USPQ2d 1321 (Fed. Cir. 1990); *In re Newell*, *supra*; *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). As argued throughout prosecution of this application, the present invention addresses and solves problems with bearings at **high temperatures**. As Takata et al. and Ochi et al. neither disclose nor suggest bearings **for high temperature service**, the problems addressed and solved by the claimed invention are **alien to these references**.

Specifically, high temperature tempering is performed to ensure dimensional stability. However, high temperature tempering disadvantageously generates problems, such as lower hardness and shortening of bearing life. Again, these problems do not even exist in the steels disclosed by Takata et al. or Ochi et al. However, in accordance with the present invention, such problems are addressed and solved by strategically formulating the steel composition and employing certain processing conditions, thereby enabling the fabrication of a high temperature bearing part exhibiting high dimensional stability and sufficient hardness. In other words, the claimed invention achieves a combination of conflicting objectives which are not even on the radar screen of Takata et al. or Ochi et al. Under such circumstances, the problem addressed and

solved by the claimed invention constitutes **compelling objective evidence of nonobviousness**.

### **Summary**

As a **factual** manner, neither the primary reference to Takata et al. or the secondary reference to Ochi et al. discloses or suggests a bearing steel suitable for high temperature service. Moreover, one having ordinary skill in the art would have recognized the shortcomings of SUJ2 as a high temperature bearing steel, because it was recognized that both high temperature dimensional stability and surface hardness could **not** be achieved. Thus, it can **not** be said that one having ordinary skill in the art would have been realistically motivated to entwine all of the applied references as knitted by the Examiner with a **reasonable expectation of success**.

*Velander v. Garner*, \_\_F.3d\_\_, 68 USPQ 2d 1769 (Fed. Cir. 2003); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). *In re Dow Chem. Co.*, 837 F.2d 469, 5 USPQ2d 1529 (Fed. Cir. 1988). Moreover, upon giving due consideration to Appellants' solution of the simultaneous high temperature dimensional stability and surface hardness problem, a potent indicum of **nonobviousness** particularly since the prior art failed to solve that problem, the conclusion appears inescapable that one having ordinary skill in the art would **not** have found the claimed invention **as a whole** obvious with the meaning of 35 U.S.C. §103. *Jones v. Hardy*, *supra*.

### **Conclusion**

It should, therefore, be apparent that the Examiner failed to establish a prima facie case of obviousness under 35 U.S.C. §103 for lack of the requisite actual basis and want of the requisite motivation. Further, upon giving due consideration to the problem addressed and solved by the claimed invention as an indicum of nonobviousness, the conclusion appears inescapable that

one having ordinary skill in the art would **not** have found the claimed invention **as a whole** obvious within the meaning of 35 U.S.C. §103. *Jones v. Hardy, supra.*

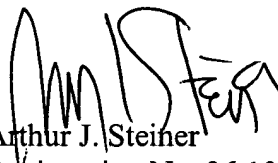
**IX. PRAYER FOR RELIEF**

Based upon the foregoing, Appellant submits that the Examiner's rejections of claims 1 and 2 under 35 U.S.C. §103 are factually and legally erroneous. Appellants, therefore, respectfully solicit the Honorable Board to reverse each of the Examiner's rejections under 35 U.S.C. § 103.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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## APPENDIX

1. A part of an antifriction bearing for a high temperature having an inner ring, an outer ring and a rolling element,

consisting of a steel product containing C by at least 0.8% and not more than 1.3%, Si by at least 0.5% and not more than 3.0%, Mn by at least 0.2% and not more than 1.5%, P by not more than 0.03%, S by not more than 0.03%, Cr by at least 0.3% and not more than 5.0%, Ni by at least 0.53% and not more than 3.0%, Al by not more than 0.050%, Ti by not more than 0.003%, O by not more 0.0015% and N by not more than 0.015% in mass % as the contents of alloying elements with the rest consisting of Fe and unavoidable impurities and having a structure subjected to tempering after quench hardening or carbonitriding, wherein the hardness after said tempering is at least HRC 58, when tempered at a temperature in a range of 180°C to 350°C, and the maximum carbide size is not more than 8  $\mu\text{m}$ .

2. The antifriction bearing part for a high temperature according to claim 1, wherein said steel product further contains at least one of at least 0.05 % and less than 0.25 % of Mo and at least 0.05 % and not more than 1.0 % of V in mass %.